

Cell Phone-based Lateral Flow Assay for Blood Biomarker Detection, Phase II

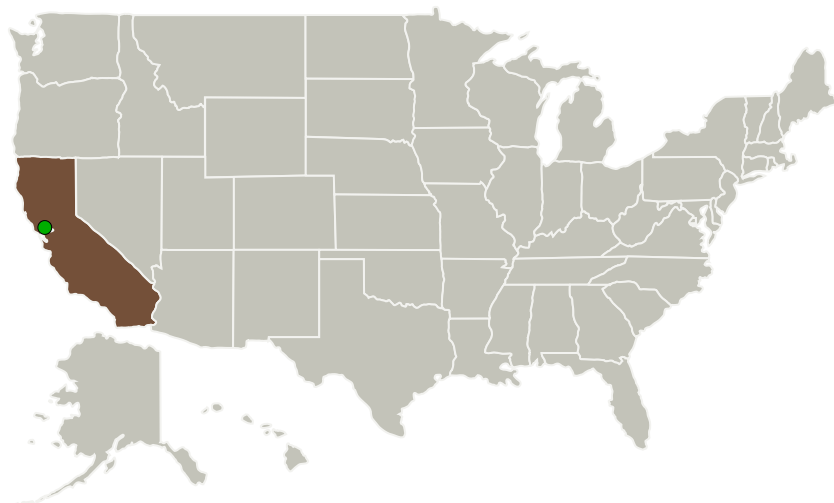
Completed Technology Project (2013 - 2016)



Project Introduction

The ability to integrate a sensor platform with a cell phone for health monitoring and disease diagnosis for astronauts in space has the potential to be cost effective and space saving. In this proposal, Intelligent Optical Systems (IOS) builds upon its expertise in lateral flow test strip (LFTS) assays by integrating an LFTS with a cell phone for the quantitative measurement of blood-based biomarkers. Our innovative and extremely cost-effective multi-analyte LFTS approach is eminently suited for space travel. Taking advantage of the built-in flash and high resolution camera, in Phase I we have modified a commercially available cell phone with optical filters, lenses, a UV LED excitation source, and a cassette holder for LFTS image capture. In Phase II, we will expand the capability of cell phone-based LFTS for an antibody-antigen sandwich binding assay to include blood gas measurements by developing sensitive indicator films to be integrated with our cell phone-based detector. Furthermore, we will develop cell phone-based software for on-cell phone detection and data processing with an expanded panel of biomarkers, advancing the TRL from 5 to 7.

Primary U.S. Work Locations and Key Partners



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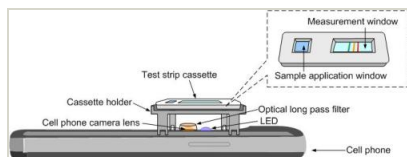


| Organizations Performing Work | Role | Type | Location |
|-----------------------------------|-------------------------|-------------|---------------------------|
| Intelligent Optical Systems, Inc. | Lead Organization | Industry | Torrance, California |
| ● Ames Research Center(ARC) | Supporting Organization | NASA Center | Moffett Field, California |

Primary U.S. Work Locations

California

Images



Briefing Chart

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(<https://techport.nasa.gov/image/129311>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Optical Systems, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Henry Lin

Co-Investigator:

Henry Lin

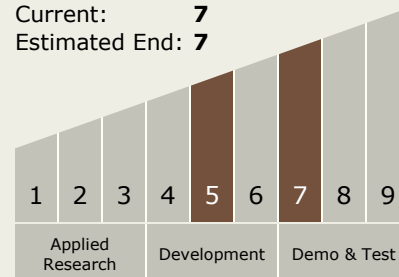
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Technology Maturity (TRL)

Start: 5
Current: 7
Estimated End: 7



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.3 Human Health and Performance
 - └ TX06.3.1 Medical Diagnosis and Prognosis

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System